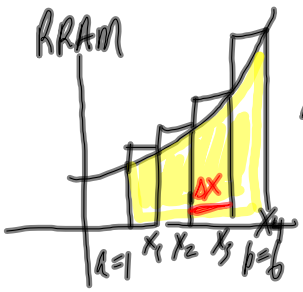
5.1 rectangular approximation methods

approximate the area under a curve

ex $f(x) = x^2 + 2$

RRAM



$n = 4$

$\Delta x = \frac{6-1}{4}$

$\Delta x = 1.25$

K

$x_1 = 1 + 1.25 = 2.25$ $y_1 = 2.25^2 + 2 = 7.0625$

$x_2 = 1 + 2(1.25) = 3.5$ $y_2 = 3.5^2 + 2 = 14.25$

$x_3 = 1 + 3(1.25) = 4.75$ $y_3 = 4.75^2 + 2 = 24.5625$

$x_4 = 1 + 4(1.25) = 6$ $y_4 = 6^2 + 2 = 38$

$A \approx A_1 + A_2 + A_3 + A_4$

$A \approx 7.065 \cdot 1.25 + 14.25 \cdot 1.25 + 24.5625 \cdot 1.25 + 38 \cdot 1.25$

$A \approx 104.84375$

Nov 12-11:15 AM

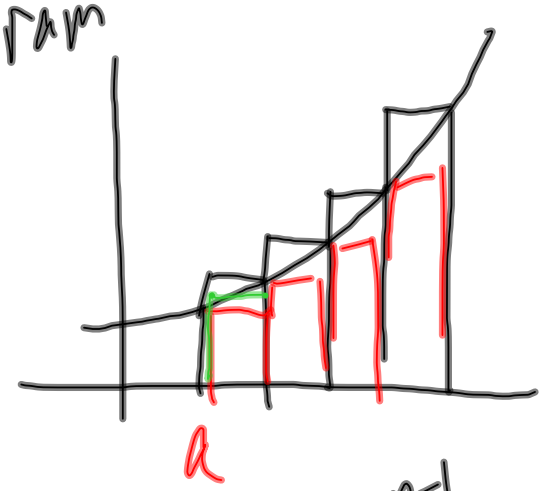
$\Delta x = \frac{b-a}{n}$

$\sum_{k=1}^{n} f(a + k \cdot \Delta x) \cdot \Delta x$

rram

Nov 12-11:58 AM

lram

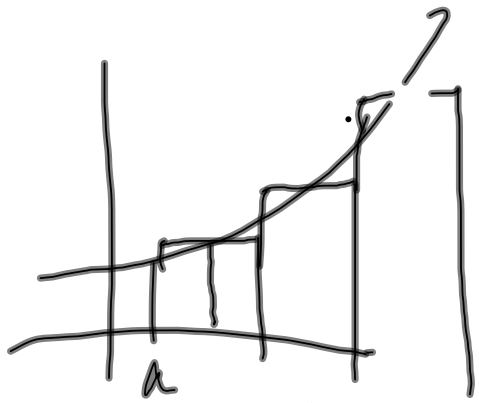


$$\Delta x = \frac{b-a}{n}$$

$$\sum_{k=0}^{n-1} f(a + k\Delta x) \cdot \Delta x$$

Nov 12-12:14 PM

mram



$$h = \frac{b-a}{n}$$

$$\sum_{k=0}^{n-1} f\left(a + \frac{h}{2} + k \cdot h\right) \cdot h$$

Nov 12-12:25 PM